2/2 026 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0128166

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT WAS SHOWN IN EXPERIMENTS ON RABBITS WITH THE USE OF THE METHODS OF FLAME PHOTOMETRY AND MICRO ASTHRUP THAT TRAUMATIC SHOCK INDUCED A MARKED METABOLIC ACIDOSIS IN THE BLOOD; THE DEGREE OF THIS ACIDOSIS DEPENDED ON THE PHASE OF SHOCK. AN ELEVATION OF BLOOD AND CEREBROSPINAL FLUID POTASSIUM CONTENT WAS SEEN DURING THE ERECTILE AND TORPID PHASES OF SHOCK. AN INCREASE OF SODIUM CONTENT IN THE CEREBROSPINAL FLUID AND ITS FALL IN THE ARTERIAL BLOOD WAS NOTED DURING THE TORPID PHASE OF SHOCK. THERE IS AN INCREASE OF MIXED RESPIRATORY METABOLIC ALKALOSIS IN THE CREBROSPINAL FLUID DEPENDING ON THE PHASE OF SHOCK. DURING THE ERECTILE PHASE ALKALOSIS IS MAINTAINED ON ACCOUNT OF INTENSIFIED ACCESS OF CARBON DIOXIDE FROM THE CEREBROSPINAL FLUID SPACES INTO THE BLOOD; DURING THE TORPID PHASE OF ALKALOSIS IN THE CEREBROSPINAL FLUID IS INTENSIFIED AS A RESULT OF INCREASED PERMEABILITY OF THE HEMATO ENCEPHALIC BARRIER AND A FALL OF CARBON DIOXIDE TENSION IN THE BRAIN SYSTEM. FACILITY: KAFEDRA NORMAL'NOY FIZIOLOGII VOYENNO-POLEVOY KHIRURGII VOYENNO-MEDITSINSKOY AKADEMII, LENINGRAD.

UNCLASSIFIED

Acc. Nr: AP0052076 Ref. Code: UR0396

PRIMARY SOURCE: Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, 1970, Vol 14, Nr 1, pp 34-39

ACID-BASE BALANCE AND GASEOUS TENSION IN THE CEREBROSPINAL FLUID IN OVERLOADS OF VARIOUS DIRECTION

B. M. Savin, A. G. Kuzovkov, B. M. Ivanov

Single action upon rabbits of a series of overloads (5 g) in the head-pelvis direction causes a fall of standard bicarbonates and of pCO_2 in the arterial blood. pCO_2 increases in the venous blood, but bicarbonates remain at the previous level; as to cerebrospinal fluid, there is a rise of bicarbonates, pCO_2 and of buffer base. These shifts do not lead to statistically reliable changes of pH of the media under study. pH of arterial blood and of cerebrospinal fluid remains the same in repeated actions of overloads; but it falls in the blood flowing from the brain. Overloads in the pelvis-head direction are accompanied by more marked changes of the acid-base balance in the blood and cerebrospinal fluid, as well as by considerable disturbances by oxygen supply of the brain tissues. Decompensated metabolic acidosis develops in the blood; no marked shifts are seen in the pH of cerebrospinal fluid, despite the changes in the components of the acid-base balance.

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USSR UDC 612.824.014.477-063

SAVIN, B. M., KUZOVKOV, A. G., and IVANOV, B. M., Chair of Normal Physiology, Military Medical Academy imeni S. M. Kirov

"Acid-Base Balance and Gas Tension in the Cerebrospinal Fluid and Blood After Accelerations in Different Directions"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, No 1, 1970, pp 34-39

Abstract: Exposure of rabbits to a series of accelerations (5 G) in the head-pelvis direction lowered the sodium bicarbonate level and pCO_2 of arterial blood. Acceleration increased the pCO_2, but had no effect on the bicarbonate level in venous blood. Acceleration increased the pCO_2, bicarbonate level, and buffer bases in the cerebrospinal fluid. However, these effects did not significantly alter the pH of these fluids. Repeated exposure of the animals to the same accelerations (5 series over 5-7 days) had the same effect on the arterial blood and cerebrospinal fluid pH as did exposure to a single series, but the pH of venous blood flowing from the brain was reduced while the pCO_2 was reduced. Acceleration in the pelvis-head direction

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USSR

SAVIN, B. M., et al., Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, No 1, 1970, pp 34-39

caused more pronounced shifts in the acid-base balance in the blood and cerebrospinal fluid, and disrupted oxygen supply of brain tissues. Decompensated metabolic acidosis developed in the blood. Although there were changes in the components of the acid-base balance in the cerebrospinal fluid, they did not significantly affect its pH. Thus, regardless of the acceleration vector, the pH of brain fluids remained within normal limits due to the active role played by the blood-brain barrier.

USSR UDC 576.314

IVANOV, B. N., KONOSHENKO, A. I., and KURELLA, G. A., Chair of Biophysics, Moscow State University

"Number and Properties of Fixed Negative Charges in the Cell Wall"

Moscow, Biologicheskiye Nauki, No 12, 1970, pp 38-40

Abstract: Fixed negative charges were studied in cell membranes of the freshwater algae Nitella flexilis by means of potentiometric titration. Two discontinuities appeared on the titration curves, suggesting that the cell wall has two basic types of fixed ionogenic groups with different ionization constants. The position of the first discontinuity relative to the ordinate showed that some of the charged groups in the membrane were active in a neutral or even weakly acid medium. The number of these charges, determined from the titration curves, was 0.5 to 0.6 meq/mg of air-dried membrane. The second discontinuity was around 1.4 to 1.8 meq/mg. Most of the fixed negative charges were ionized carboxyl radicals of polyuronic acids. The existence of two groups with different ionization constants can be interpreted in two ways. Either the polyuronic acids in the cell wall are in different states (depending, for example, on the length of the macromolecule chain) so that the carboxyl radical possess different capacities for ionization, or some of the charges are not bound with the uronic components of the membrane. 1/1

USSR

UDC 621.397(088.8)

VALIK, I. L., IVANOV, B. P.

"Device for Measuring the Probability of Detecting a Target of Elementary Shape"

USSR Author's Certificate No 253184, Filed 29 Feb 68, Published 24 Feb 70 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9G230P)

Translation: This author's certificate introduces a device which permits evaluation of the capacity of a television camera to reproduce fine low-contrast objects. The operation of the device is based on measuring the probability of detecting an object of elementary shape (a test table element) by comparing the difference between the average signal with respect to the area of the object and each of the average signals of four adjacent elements of the same area.

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USSR

UDC 669.14'786:541.123.28

IVANOV, B. S., KONDRAT'YEV, A. I., TOMILIN, I. A., LEVIN, F. L., and MEL'KUNOV, I. N., Moscow

"Causes of Formation of Gas Blowholes in Nitrogen-Containing Steel Ingots"

Moscow, Akademiya Nauk SSSR. Izvestiya. Metally, No 6, Nov-Dec 72, pp 108-113

Abstract: A study was made of the effect of weight and ingot quenching conditions on the quality of the macrostructure, solubility of nitrogen in solid and molten steels near the point of crystallization, and structural state of the metal at high temperatures. The mass of the ingot and the quenching regime exerted a weak effect on the reduction in the development of gas porosity in nitrogen-containing steel ingots. The drastic reduction of the solubility of nitrogen during the crystallization of the metal, owing to the formation of the ferrite component, was the principal cause of the origin of gas blowholes in high-alloy nitrogen-containing steel ingots. The formation of gas blowholes is possible with a nitrogen content in the molten metal surpassing its solubility in the crystallizing austenitic component.

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USSR

UDC 669.15'786-194-3

TOMILIN, I. A., KONDRAT'YEV, A. I., and IVANOV, B. S., Moscow

"Calculation of the Solubility of Nitrogen in Alloyed Iron Melts Taking Into Account the Deviation From the Ideal"

Moscow, Izvestiya Akademii Nauk USSR, Metally, No 5, Sep-Oct 72, pp 33-37

Abstract: The calculation of the solubility of nitrogen in alloyed iron melts is based on previous investigations by one of the authors (Tomilin, I. A., Ibid., No 2, 1969, p 44, & Chernaya Metallurgiya, No 3, 1968, p 56) which showed a systematic deviation between calculated and experimentally derived concentrations of nitrogen in steel at N contents over 0.3 wt%. This deviation, rising with increasing N concentration, was found to be independent of the type and quantity of alloying elements and the temperature. From the analysis of thermodynamic properties of carbon and nitrogen in iron base melts, an equation is derived which characterizes the nitrogen activity coefficient dependence on its concentration. The correlation of experimental and calculated data confirmed the possibility and expediency of using the concepts developed for calculating the limiting concentration of nitrogen in the melt. Two figures, twelve formulas, eight bibliographic references.

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CSO: 1842-W

USSR

UDC 621.391.2

ALEKSEYEV, V. A., ANTONETS, M. A., GATELYUK, E. D., ZHIVORA, P. S., IVANOV, B. S., KRYUKOV, A. YE., TIKHONOV, YU. A., YANKAVTSEV, M. V.

"Interference Correlometer using a Digital Computer"

Moscow, Radiotekhnika i elektronika, Vol XVII, No 2, 1972, pp 332-339

Abstract: Specific problems connected with the construction of a correlation detection system in which the receivers are located at a distance excluding the possibility of direct coupling with the correlator are discussed. The problems of constructing the interference correlometer with recording of the investigated signals at each point on magnetic tapes and calculation of the correlation function on a digital computer are considered. The peculiarities of calculating the correlation function connected with the application of superheterodyne receivers are noted, and results are presented from laboratory checking of the system. Satisfactory coincidence of the experimental and theoretical results was obtained. For 10 kilohertz $\leq F \leq$ 75 kilohertz and T = 30 seconds, the correlation gain of the developed system Q = 1000. The investigated system can also be used for autocorrelation and cross correlation analysis of processes represented by electric signals and for spectral analysis of signals represented in analog form for multilevel quantization at a digital computer input.

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USSR

UDC 542.91:547.1'118

IVANOV, B. Ye., SAMURINA, S. V., LEBEDEVA, N. N., AGEYEVA, A. B., and GOL'DFARB, E. I., Institute of Organic and Physical Chemistry, imeni A. Ye. Arbuzov, Academy of Sciences, USSR

"Reaction of o-Hydroxybenzyl Alcohol With Phosphorous Acid Esteramides and Amides"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 8, Aug 73, pp 1825-1827

Abstract: The reaction of o-hydroxybenzyl alcohol with diethylamidodiethylphosphite, bis(diethylamido)ethyl phosphite and tris(diethylamido) phosphite was studied. It was established that in the nucleophilic substitution reactions, the nucleophilic center may be at the phosphorus atom or at the nitrogen atom in phosphorous acid esteramides and amides.

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USSR

UDC 541.67:543.422.4:547.1'118

SHAGIDULLIN, R. R., BEL'SKIY, V. YE., ASHRAFULLINA, L. KH., KUDRYAVTSEVA, L. A., IVANOV, B. YE.

"Study of Dipole-Dipole Interaction of Phosphoryl Compounds with the Environment by the Method of Infrared Spectroscopy"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973, pp 2502-2504

Abstract: A study was made of the nature of the variation of the valence phosphoryl oscillation frequency $\nu_{P=O}$ in different media for phosphoryl compounds differing significantly with respect to dipole moments. The interaction with the environment of organophosphorus ethers, amides, acid chlorides and trialkyl (aryl) phosphine oxides having a phosphoryl group takes place by the same mechanism as the linearity of the variation of the valence oscillation frequency of the P=O bond under the effect of the environment indicates. The interaction of the phosphoryl compounds with the environment is intensified with an increase in their dipole moments which can be caused by an increase in the polarity of the P=O bond. The capacity of the phosphoryl compounds for interaction with the environment depends on the intramolecular effects of the substitutions on the phosphorus determined by the Taft induction constants.

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USSR

UDC 543.878+547.26'118

BEL'SKIY, V. YE., KUDRYAVYSEVA, L. A., and IVANOV, B. YE., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzova, Academy of Sciences USSR

"Structure and Chemical Shift in the NMR Spectra of P^{31} of the Esters of Phosphonic Acids"

Leningrad, Zhurnal Obshchey Khimmii, Vol 42(104), Vyp 11, 1972, pp 2427-2431

Abstract: A study of the hydrolysis kinetics of substituted phosphonates having the general form $RP(O)OEt)_2$ indicated a linear relationship between the size of δ_P and the logrithm of the constant of base hydrolysis velocity of these ethers. The δ_P also showed a linear relationship with the induction oncstant ω^* of the R radical in 37 compounds. However, the presence of π bonds or free electron pairs on the α-atom in the R radical allows for a pdπ interaction with the d orbitals of the phosphorus. The above linear relationships do not hold for such compounds and thus they were not included in the plot. the greatest pd π interaction was observed for the C$\equiv$C, C$=$O and P$=$O groups.

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USSR

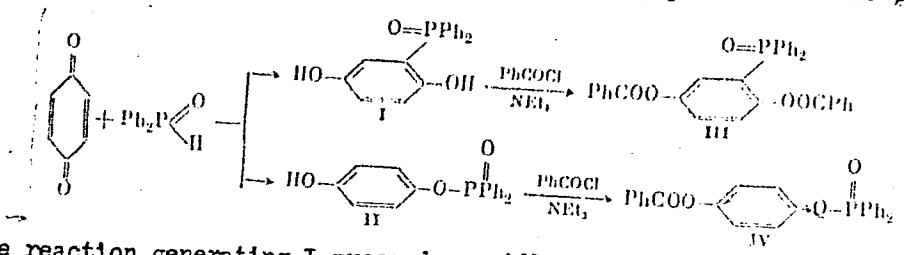
UDC 547.241+547.341

MAGDEYEV, I. M., LEVIN, YA. A., and IVANOV, B. YE., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzova, Academy of Sciences USSR

"The Product of the Reaction of Diphenylphosphinous Acid and Its Chloroanhydride with ρ-Benzoquinone"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972, pp 2415-2418

Abstract: The title reaction using the acid may proceed via two paths



The reaction generating I proceeds rapidly and almost quantitatively to form 1:1 adduct in a benzene solution in the absence of a catalyst. This reaction may also proceed generating product II by attack on the oxygen.

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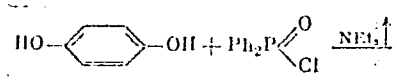
USSR

MAGDEYEV, I. M., et al., Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972, pp 2415- 418

The ether II may also be prepared by the following reaction starting with the anhydride:



Two additional compounds (III) and (IV) were prepared from compounds I and II respectively., by treatment with PhCOCl and triethylamine. Structures were confirmed by IR spectra. Preparation, compositional and physical data are given for the above four compounds.

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USSR

UDC 542.91:547.85:547.1'118

REZNIK, V. S., BAKULIN, V. S., IVANOV, B. YE., GOL'DFARB, E. I., and SAMARTSEVA, S. A., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR

"Synthesis and Properties of Pyrimidinylalkylphosphonic Acids. Communication 7. Synthesis and Properties of Uracylphosphates"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 4, Apr 73, pp 879-883

Abstract: The sodium salt of uracyl reacted with diphenylchlorophosphate (I) in absolute benzene to yield 2,4-bis(diphenylphosphonoxy)-pyrimidine. Reaction of the sodium salt of 1,6-dimethyluracyl with (I) in m-xylene gives 1,6-dimethyl-4-(diphenylphosphonoxy)uracyl, and the reaction of the sodium salt of 3,6-dimethyluracyl with (I) in m-xylene gives a mixture of inseparable isomers. All of these uracylphosphates react with alcohols at about 20° giving quantitative yields of uracyls and corresponding alkyldiphenylphosphates.

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USSR UDC 542.91:547.85:547.1'118

REZNIK, V. S., BAKULIN, V. S., and IVANOV, B. YE., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR

"Synthesis and Properties of Pyrimidinylalkylphosphonic Acids. Communication 6. Reaction of Certain Hydroxypyrimidines With Dibutyl Ester of 3-Chloropropylphosphonate"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 4, Apr 73, pp 875-878

Abstract: This study was aimed at the reactions of sodium salt of uracyl (I), 6-methyluracyl (II) and 2-amino-4-hydroxy-6-methylpyrimidine (III) with dibutyl ester of 3-chloropropylphosphonic acid (IV) in DMF or butanol, using equimolar quantities of the reagents. The reaction of (I) and (IV) gives a mixture of 1,3-bis[3'-dibutylphosphono)propyl]uracyl and dibutyl ester of 3-(2',4'-dioxo-1',2',3',4'-tetrahydropyrimidinyl-1')propylphosphonic acid. (II) reacted with (IV) yields also a mixture of two products -- analogues of above compounds with a 6-methyl substituent. Reaction of (III) and (IV) in refluxing butanol yields a mixture of dibutyl esters of 3-(2'-amino-6'-methyl-pyrimidinyl-4'-hydroxy)propylphosphonic acid and 3-(2'-amino-4'-oxo-6'-methyl-3',4'-dihydropyrimidinyl-3')-propylphosphonic acid.
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USSR UDC 542.91:547.1'118

IVANOV, B. YE., and KROKHINA, S. S., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Interaction of N-Aminomethylamides of Carboxylic Acids with Phosphorous Acid Esters"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, Nov 71, pp 2493-2499

Abstract: Continuing their study of the interaction of Mannich bases with trialkyl phosphites, the authors studied the interaction of Mannich bases from carboxylic acid amides with phosphorous acid esters, viz. the interaction of di- and trialkyl phosphites with N-dialkylaminomethylamides of acetic, benzoic, methacrylic acids and with N-dimethylaminomethylphthalimide. The reaction of the N-dialkylaminomethylamides of the above monoacids with trialkyl phosphites proceeds at 120-170° to give the corresponding esters of N-acylaminomethylphosphonic acids. N-Dimethylaminomethylphthalimide reacts with trialkyl phosphites only in the presence of a salt-forming agent -- acetic acid or methyl iodide, with the direction of the reaction depending on the character of the salt-forming agent. Thus, N-dimethylaminomethylphthalimide iodomethylate reacts 1/2

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IVANOV, B. YE., and KORKHINA, S. S., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, Nov 71, pp 2493-2499

with triethyl phosphite at 200° to give diethyl ester of α-phthalimino-methylphosphonic acid. N-Dimethylaminomethylphthalimide reacts with trialkyl phosphites in the presence of acetic acid at 100-110° to give the corresponding esters of dimethylaminomethylphosphonic acid, phthalimide and alkyl acetate.

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USSR

UDC 542.953:661.718.1

IVANOV, B. YE., KUDRYAVTSEVA, L. A., ZYABLIKOVA, T. A., BYKOVA, T. G., and GOL'DFARB, E. I., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov of the Academy of Sciences USSR

"Condensation of Diethylphosphorous Acid with Formaldehyde and Triethyl Phosphite"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, 1971, pp 1497-1502

Abstract: Condensation was carried out in the ternary system triethyl phosphite (TEP)-formaldehyde-diethylphosphorous acid (DEP). The formation of the product, diethyl ester of ethylphosphonic acid (I), results from the partial isomerization of triethyl phosphite in the presence of diethylphosphorous acid. Other products formed included: diethyl ester of alpha-hydroxymethylphosphonic acid, diethylphosponomethyl diethyl phosphite, bis-(diethylphosphone) methyl ester, 2,5-dioxa-2,5-dihydroxy-1,4,2,5-dioxadiphospholenane, and a product with the gross formula $C_8H_{20}O_6P_2$. The latter is probably a mixture of esters of hypophosphoric and isohypophosphoric acids. The structure of each product was proven by chemical and physical methods. These included nuclear magnetic

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IVANOV, B. Ye, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, 1971, pp 1497-1502

resonance spectra, melting-point tests, and infrared spectra. Different quantitative ratios of the ternary system components were combined to provide data for the corresponding multi-product yield percentages for each ternary component ratio used.

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USSR

UDC: 547.341.07

MAGDEYEV, I. M., LEVIN, Ya. A., IVANOV, B. Ye., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov

"A Method of Synthesizing 2,5-Dihydroxyphenyldiphenylphosphine Oxide"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 15, May 71, Author's Certificate No 302346, Division C, filed 16 Mar 70, published 28 Apr 71, p 81

Translation: This Author's Certificate introduces: 1. A method of synthesizing 2,3-dihydroxyphenyldiphenylphosphine oxide by the reaction of a phosphinous acid derivative with p -benzoquinone in an organic solvent with heating, and isolating the product by conventional methods. As a distinguishing feature of the patent, the process is simplified by using diphenylphosphinous acid dichloride as the phosphinous acid derivative, and carrying out the process in the presence of water. 2. A modification of this method distinguished by the fact that the process is carried out at 60-65°C. 3. A modification of this method distinguished by the fact that benzene is used as the solvent. 4. A modification of this method distinguished by the fact that the diphenylphosphinous acid dichloride is added with strong agitation to an emulsion of water and a benzene solution of p-benzoquinone. 5. A modification of this method distinguished by the fact that the initial reagents are taken in equimolar proportions.

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USSR

UDC 542.91:661.718.1

IVANOV, B. YE., VALITOVA, L. A., and KROKHINA, S. S., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Reaction of N-(Acetoxymethyl)diethylamine with Certain Derivatives of Trivalent Phosphorus Acids"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, 1971, pp 1502-1505

Abstract: Reactions of mono-, di-, and triamidophosphites, triphenyl-, diethyl acetyl-, and diethyl chlorophosphites with (acetoxymethyl)diethylamine (I) was studied. The volatile reaction products were identified by gas-liquid chromatography in the reaction of (I) with mono- and diamidophosphites as being the corresponding esters of acetic acid and diethylacetamide in the reaction with triamidophosphite. Reactions of (I) with triphenyl phosphite occurs less vigorously than with amidophosphites: its completion requires heating to 80°. When the reaction mixture was distilled under vacuum, phenyl acetate and the diphenylester of diethylaminomethylphosphonic acid were isolated. When (I) reacts with diethyl acetylphosphite, the principal products were found to be acetic anhydride and the diethyl ester of diethylaminomethylphosphonic acid.

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IVANOV, B. YE., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, 1971, pp 1502-1505

It was found that the reaction of (I) with the acid chloride of diethylphosphorous acid occurs in two stages and that diethylchlorophosphite is an electrophile. This series of reactions shows that replacement of chlorine by an acetate group in an electrophilic reagent greatly expands the scope of the Arbuzov rearrangement.

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UDC 547.341.26'118.07

USSR

IVANOV, B. Ye., and KROKHINA, S. S., "Order of the Red Banner of Labor" Institute of Physical and Organic Chemistry imeni A. Ye. Arbuzov

"A Method of Making N-Acylaminomethylphosphonate Esters"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 33, Soviet Patent No 284989, class 12, filed 9 Oct 69, published 29 Oct 70, p 25

Translation: This Author's Certificate introduces: 1. A method of making N-acylaminomethylphosphonate esters by the reaction of derivatives of N-methylolamides of carboxylic acids with a trialkyl phosphite with the application of heat and isolation of the product by conventional methods. As a distinguishing feature of the patent, the method is simplified while simultaneously increasing the yield of the product by using N-acetoxy-methylamides of carboxylic acids as the methylolamides. 2. A modification of this method is distinguished by the fact that heating is done at 100-160°C.

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USSR

UDC 542.91 + 661.718.1

IVANOV, B. YE., and KROKHINA, S. S., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Synthesis of p-Substituted Benzylphosphonic Acid Esters"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, Nov 70, pp 2629-2631

Abstract: The reaction of p-dimethylaminobenzyldiethylamine, p-dimethylaminobenzyl ethyl ether, p-methoxybenzyl ethyl ether and p-methoxybenzyl acetate with triethyl phosphite was studied. It was found that compounds containing the dimethylamino group in the para-position react with triethyl phosphite in the presence of acetic acid to give the diethyl ester of p-dimethylaminobenzylphosphonic acid. Esters of p-substituted benzylphosphonic acids could not be synthesized from p-methoxybenzyl ethyl ether and p-methoxybenzyl acetate and triethyl phosphite in the presence of acetic acid. p-Dimethylaminobenzyldiethylamine methiodide reacts with triethyl phosphite to give the diethyl

USSR

UDC 542.91 + 661.718.1

IVANOV, B. Ye., GOKIN, Ya. A., and KHOKHINA, S. S., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Synthesis of α-Acetaminomethylphosphonic Acid Esters"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, Nov 70, pp 2627-2629

Abstract: The reaction of N-alkoxymethylacetamides with trialkyl phosphites (in the presence of acetic acid), dialkyl chlorophosphites and diethyl acetylphosphite gives α-acetaminomethylphosphonic acid esters.

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USSR

UDC: 542.91+661.718.1

IVANOV, B. Ye., KUDRYAVTSEVA, L. A., and ZYABLIKOVA, T. A., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Formation of Oxaphospholane Derivatives in the Phosphonmethylation of Compounds with a Mobile Hydrogen Atom"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 70, pp 96-100

Abstract: Five-membered cyclic esters with oxaphospholane (I) structure, along with mixtures of dialkyl(Me,Et) 2,2-dicarbethoxyethylphosphonates(II), were synthesized by heating at 145-180° mixtures of di-Et malonate, tri-Me(Et) phosphite, and paraformaldehyde in excess. The yield of I was higher with trimethyl than with triethyl phosphite(33 versus 24%). But pure II was separated by redistillation from the products of the reaction with triethyl phosphite only. The products with oxaphospholane structure, where R=CN, R'=Me, or R=Ac, R'=Et, were obtained (without any appreciable amounts of II), by similar reactions of two other compounds with a mobile H atom--Et cyanoacetate and Et acetylacetate, tri-Me or tri-Et phosphite, respectively, and paraformaldehyde. The I structure was confirmed by elemental analysis data,

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USSR

IVANOV, B. Ye., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 70, pp 96-100

IR, ESR, and NMR spectra of the products. Also, 2-methoxy-2-oxo-4,4-dicarbethoxy-1,2-oxaphospholane was hydrolyzed by heating with diluted HCl to 2-carboxy-2,3-propylenylphosphonic acid.

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USSR

UDC 542.91 + 661.718.1

IVANOV, B. Ye., and KUDRYAVTSEVA, L. A., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Phosphousmethylation of Acetoacetic Ester and Acetylacetone"

Moscow, Izvestiya Akademii Nauk, SSSR, Seriya Khimicheskaya, No 1, Jan 71, pp 125-131

Abstract: Acetoacetic ester reacts with trialkyl phosphites and formaldehyde or furfural by the usual phosphousmethylation yielding 2-acetyl-2-carbalcoxy-ethylphosphonic acid esters. The reaction is carried out over several hours at 140-200°C, ethansl being distilled. Tetraline or excess triethyl phosphite are used as solvents. When acetoacetic ester reacted with triethyl phosphite and benzaldehyde priopionaldehyde or butyraldehyde, the expected 1-alkyl (aryl) 2-acetyl-2-carbalcoxyphosphonic acid esters (I) were not isolated, instead the products obtained were 2-keto-2-ethoxy-3-alkyl(aryl)-4-carbethoxy-5-methyl-1--keto-2-phospholenes-4 and 1-alkyl-2-acetylethylphosphonic acid esters. Obviously (I) are thermally unstable. Condensation carried out in the ternary system triethyl phosphite-formaldehyde-acetylacetone yields esters of 2-acetyl-ethylphosphonic acids in addition to the normal products of phosphonmethyla-tion -- the esters of 2,2-diacetylethylphosphonic acids.

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USSR UDC 524.91+547.461.3+547.241

IVANOV, B. Ye., KUDRYAVTSEVA, L. A., and BYKOVA, T. G., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences of the USSR

"Interaction of α-Hydroxymethylmalonic and Bis-(α-hydroxymethyl)malonic Esters With Trialkylphosphites"

Moscow, IAN SSSR, Seriya Khimicheskaya, No 9, Sep 70, pp 2,063-2,067

Abstract: The authors investigated interaction of α-hydroxymethylmalonic and bis-(α-hydroxymethyl)malonic esters with triethylphosphite, trimethylphosphite and diethylchlorophosphite. Diethyl ester of 2,2-dicarbethoxyethylphosphinic acid is produced by reacting α-hydroxymethylmalonic ester with triethylphosphite and diethylchlorophosphite. 2-Alkoxy-2-oxo-4, 4-dicarbethoxy-1-oxa-2--phospholans are synthesized by interacting bis-(α-hydroxymethyl)malonic ester with trialkylphosphites and diethylchlorophosphite.

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1/2 013 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--FORMATION OF OXAPHOSPHOLANE DERIVATIVES IN THE PHOSPHONOMETHYLATION OF COMPOUNDS WITH A MOBILE HYDROGEN ATOM -U-

AUTHOR--IVANOV, B.YE., KUDRYAVTSEVA, L.A., ZYABLIKOVA, T.A.

COUNTRY OF INFO--USSR

SOURCE--AKAD. NAUK SSSR, SER. KHIM. 1970, (1), 96-100

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NMR SPECTRUM, ORGANIC PHOSPHORUS COMPOUND, FORMALDEHYDE, MALONIC ESTER, ETHER, HETEROCYCLIC BASE COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/1612 STEP NO--UR/0062/70/000/001/0096/0100

CIRC ACCESSION NO--AP0100222

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0100222

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HEATING 24 G DI-ET MALONATE, 9 G PARAFORMALDEHYDE, AND 18.6 G P(OME)SUB3 TO 110DEGREES (EXOTHERM), AND HEATING 3-4 HR AT 150DEGREES GAVE A FRACTION, B SUB0.001 120-30DEGREES, CONTG. MIXED DI-ME 2,2,DICARBENTHOXY ETHYLPHOSPHONATE (I) AND 2,METHOXY,2,OXO,4,4,DICARBETHOXY,1,2, OXAPHOSPHOLANE (II), SEPD. BY REDISTN.: I B SUB0.03 125-6DEGREES, N PRIME20 SUBD 1.4390, D PRIME20 MINUS; II B SUB0.004 136-8DEGREES, 1.4535, 1.2492. SIMILAR REACTION WITH P(OET)SUB3 GAVE (ETO)SUB2 P(O)CH SUB2 CH(CO SUB2 ET)SUB2 AND III (R EQUALS CO SUB2 ET, R PRIME1 EQUALS ET), B SUB0.001 120-1DEGREES, 1.4490, 1.2035, IN NEARLY EQUAL AMTS. SIMILAR REACTION OF NCCH SUB2 CO SUB2 ET AND P(OME)SUB3 WITH PARAFORMALDEHYDE GAVE III (R EQUALS CH, R PRIME1 EQUALS ME), B SUB0.03 140-1DEGREES, 1.4630, 1.2738, WHILE ACCH SUB2 CO SUB2 ET AND P(OET)SUB3 WITH PARAFORMALDEHYDE GAVE III (R EQUALS AC, R PRIME1 EQUALS ET), B SUB0.015 125DEGREES, 1.4630, 1.2271: II HEATED WITH DIL. HCL GAVE HO SUB2 CC(:CH SUB2)CH SUB2 P(O) (OH) SUB2, M. 148-51DEGREES. NMR SPECTRAL CURVES (2) WERE SHOWN. A REACTION SCHEME WAS PROPOSED.

UNCLASSIFIED

USSR

UDC 547.241

IVANOV, B. YE., and ZHELTUKHIN, V. F., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Kazan, Academy of Sciences USSR

"Reactivity of Trivalent Phosphorus Derivatives"

Moscow, Uspekhi Khimii, Vol 39, No 5, May 70, pp 773-802

Abstract: A review of the most important characteristics of trivalent phosphorus derivatives with 197 references. One aspect concerns the "biphility" of the phosphorus atom -- the ability of act as a donor and as an acceptor of electrons sequentially or concurrently in reactions with other compounds by utilizing a free electron pair as well as d-orbitals in the same process. Other topics concern ambident properties of derivatives of trivalent phosphorus which result from the input of either the nucleophilic elements O, N, S, or elements with vacant d-orbitals, such as Si or Sn, bound directly to phosphorus. Some limitations of this input as well as its characteristics are discussed. Finally, compounds of the phosphorus-halide series are discussed, with particular attention to the role played by d-orbitals in affecting the reactivity of phosphorus.
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USSR UDC: 621.762.002.5(088.8)

IVANOV, D. G., REZNIK. M. G.

"Device for Processing of Powder Materials in a Gas Stream"

USSR Author's Certificate Number 347117, Filed 15/07/70, Published 4/09/72 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8G447), by S. Krivonosova).

Translation: The device (D) suggested includes a cylindrical reaction chamber, tubes for tangential gas input, tubes for feed and drainage of the powder material and a barrier consisting of a truncated cone. In order to increase the time of processing of the powder in the large fractions and prevent ejection of particles, the reaction chamber is set at an angle to the horizontal and equipped with a cylindrical pipe, located along the axis of the device and having nozzle-shaped apertures set at a tangent to the direction which is the reverse of the direction of rotation of the gas stream. The D allows large-fraction powders to be processed, providing directed movement of the material in the gas stream. The degree of trapping of particles in the D reaches 99%. The D can be used for drying of powders. 1 figure.

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USSR

UDC 621.762.002.5(088.8)

IVANOV, D. G.

"Device for Heat Treatment of Finely Dispersed Powders in a Gas Flux"

USSR Author's Certificate No 278044, filed 7 Mar 69, published 4 Nov 70 (from RZh-Metallurgiya, No 7, Jul 1971, Abstract No 7G478P)

Translation: The device for heat treatment of finely dispersed powders in a gas flux includes a vertical cylindrical reaction chamber, connecting pipes for tangential gas input, connecting pipes for feeding the powder, and a cone-shaped bottom with an outlet. In order to separate the powder from the gas flux, a partition in the form of a segment of a sphere forming an annular slot with the chamber sidewall is installed in the lower part of the chamber. In order to decrease the number of particles removed with the escaping gas, baffles executed in the form of truncated cones are attached to the partition and at the outlet located in the upper part of the chamber along the axis of the device.

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USSR

UDC 613 693 (02)

ISAKOV, P. K., IVANOV, D. I., POPOV, I. G., RUDNYY, N. M., SAKSONOV, P. P., and YUGANOV, Ye. M.

Teoriya i Praktika Aviatsionnoy Meditsiny (The Theory and Practice of Aviation Medicine), Moscow, "Meditsina," 1971, 396 pp.

Translation: Annotation: This monograph elucidates theoretical and practical questions of aviation medicine. It presents brief information on the physiology, hygiene, pharmacology, toxicology, radiology, internal medicine, surgery, psychology, and other disciplines which make up the theoretical basis of aviation medicine. Questions of the medical flight examination for flight personnel, medical checks on flight safety, evacuating sick and wounded persons by air, and medical support for various types of aviation are considered.

The book is intended for aviation doctors and students at academies and aviation institutes and faculties.

Preface

The development of aviation medicine began with the introduction of aircraft into practical use. At the present time, representatives of practically all

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ISAKOV, P. K., et al., Teoriya i Praktika Aviatsionnoy Meditsiny (The Theory and Practice of Aviation Medicine), Moscow, "Meditsina," 1971, 396 pp.

medical specialization devote attention to questions of aviation medicine. Furthermore, biologists and psychologists participate extensively in developing the scientific propositions which are used in aviation medicine.

In comparison with other occupations, flying activity involves a very high degree of action by various extreme factors on the organism. Even a slight emergency, similar to one which on the ground could be eliminated without danger to the crew, may end in disaster in the air if a set of special measures is not envisioned. For this purpose, aviation doctors participate in evaluating each new type of airplane, beginning with its design and ending with flight testing, and they conduct medical and psychological selection of candidates for flight schools. All activity by flight personnel is under constant observation by aviation doctors who regulate the flying load and participate in evaluating the pilot's readiness to perform the flight assignment.

In this book the first attempt is made to show, along with a presentation of the theoretical aspects of aviation medicine, the possibilities for applying this knowledge in the aviation doctor's practice.

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ISAKOV, P. K., et al., Teoriya i Praktika Aviatsionnoy Meditsiny (The Theory and Practice of Aviation Medicine), Moscow, "Meditsina," 1971, 396 pp

The authors made no attempt to present all questions of aviation medicine without exception. In order to carry out such an attempt at the present time, a multi-volume publication would be needed. This refers particularly to the clinical aspects of aviation medicine. The specific etiological condition for the development and course of deviations in health caused by flight factors, analyzing the possibility of performing flights after suffering diseases, and the system and methods for medical monitoring of the state of health of flight personnel are all clinical aspects of aviation medicine which are elucidated in appropriate publications and, naturally, are treated in a limited manner here.

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ISAKOV, P. K., et al., Teoriya i Praktika Aviatsionnoy Meditsiny (The Theory and Practice of Aviation Medicine), Moscow, "Meditsina," 1971, 396 pp.

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ISAKOV, P. K., et al., Teoriya i Praktika Aviatsionnoy Meditsiny (The Theory and Practice of Aviation Medicine), Moscow, "Meditsina," 1971, 396 pp.

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ISAKOV, P. K., et al., Teoriya i Praktika Aviatsionnoy Meditsiny (The Theory and Practice of Aviation Medicine), Moscow, "Meditsina," 1971, 396 pp.

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USSR UDC 595.421.082.11

IVANOV, D. I., Omsk Scientific Research Institute of Diseases with Natural Foci, Ministry of Health RSFSR

"Methods of Mass Collection and Storage of Ixodes apronophorus P. Sch. (1924) Ticks"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 40, No 4, Jul/Aug 71, pp 497-499

Abstract: Research was conducted in May and June of 1966 and 1967 by the Omsk Scientific Research Institute of Diseases with Natural Foci and the Omskaya Oblast Sanitary Epidemiological Station on 1,141 I. apronophorus ticks. From 138 bioarsays, six strains of tularemia were isolated. It was found that parallel investigations must be conducted on all tick species. Methods emerged from mass collection of I. apronophorus ticks from summer nests of the water vole. Over 3 years (1966-1968), 750 nests yielded 3,055 hungry and sated ticks in all phases of development, as well as two egg masses. Nest sites are described as well as methods for recognizing nest site and for entering the nests to make collections. Nests were collected into bags that were kept moist and carefully examined for ticks in the laboratory, away from any drafts. Not only does this method disclose more ticks (than collecting 1/2

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IVANOV, D. I., Meditsinskaya Parasitologiya i Parazitarnyye Bolezni, Vol 40, No 4, Jul/Aug 71, pp 497-499

ticks from animals alone), but the nest contains carcasses which are unseen by other methods. This collection from animals, nests, and carcasses can indicate the presence of potential foci of tularemia and establish the beginning of epizootics among water voles. Wider investigation of this tick species should determine their role in the cycle of Omsk hemorrhagic fever.

2/2

USSR UDC: 621.391.8:519.27

IVANOV, D. I.

"Energy Spectrum of a Signal Frequency-Modulated by a Multichannel Message"

Tr. uchebn. in-tov svyazi. M-vo svyazi SSSR (Works of Educational Institutes of Communications. Ministry of Communications of the USSR), 1970, vyp. 49, pp 198-200 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2A94)

Translation: A simple expression is derived for the energy spectrum of a signal frequency-modulated by a multichannel message with a large number of telephone channels or low effective indices of modulation. It is presumed that predistortions are present. Computational results are presented for various numbers of channels with and without predistortions. One illustration, one table, bibliography of four titles. N. S.

USSR

UDC: 621.384.634.3

IVANOV, D. P., KOMAR, A. P., and KOROBOCHKO, Yu. S.

"Dynamics of Electron Capture in the Betatron"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, vol. 41, No. 4, April 1971, pp 770-771

Abstract: This paper is a follow-up of a preceding article written by the last two authors named above in the Reports of the Academy of Sciences USSR (DAN SSSR, Fizika, No. 4, 1958, p 123) in which a mechanism for electron capture in betatron acceleration was proposed, based on the resonance coincidence of electron radial oscillation frequencies and the periodically changing Coulomb repulsion forces among the beam particles. Processing of the experimental data indicates that the curve of the current circulating in the chamber as a function of the injection current is nonmonotonic. On the basis of this observation, the authors of the present article theorize that the break in this curve corresponds to the optimal value of the injection current at which the

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IVANOV, D., et al., Zhurnal Tekhnicheskoy Fiziki, Vol 41, No 4, Apr 71, pp770-771

gamma-ray output provided by the accelerator is a maximum. They also specify three frequencies at which the capture of electrons at resonance is most effective, provided their idea of the capture mechanism is valid. They are members of the Leningrad Polytechnical Institute imeni M. I. Kalinin.

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AA0040740 IVANOV D.P. UR .0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 1-70

242325 ARC IRONMAKING FURNACE hearth is asymmetrically convex so that it expands towards the charging window and narrows towards the notch, whilst the electrodes lie in the narrow portion to provide continuous iron making. The charge is fed in continuously into the bath (3) of molten metal and the charged lumps draw heat from the metal which has been produced by the arc between this and the electrodes (4). The position of the notch (6) ensures that the bath meniscus remains at a constant level. Surplus flows out thus to a teeming arrangement for re-pouring into cast product. Slag also runs off continuously thus keeping the bath clean and receptive to the heat from the arc. The hottest metal flows off continuously, some of it is turbulised near the periphery and returned to the bath to melt the slag component.

19.5.67 as 1157178/22-2.CHERNYI.A.A.et al.PENZA COMPRESSOR WORKS. (2.9.69) Bul 15/25.4.69. Class 31a[1]. Int.Cl.F 27 b.

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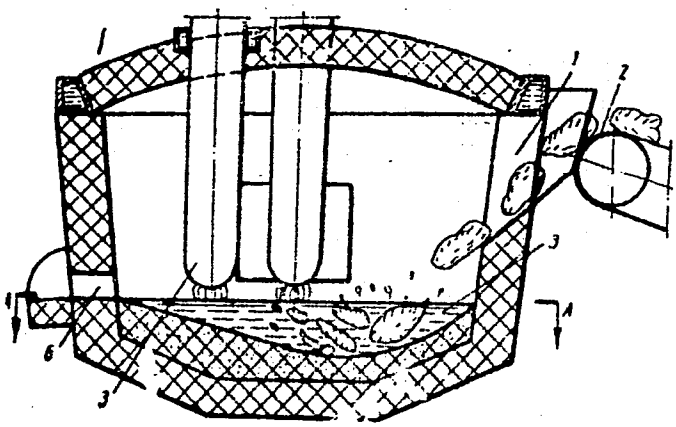

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AUTHORS: Chernyy, A. A.; Grachev, V. A.; Marienbakh, L. M.; Ivanov, D. P.; Kurbatskiy, I. L.; Sosnovskiy, Ye. D.; and Pavlenko, N. S.

Penzenskiy Kompressornyy Zavod

19750408

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1/2 016 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--POTENTIOSTATIC PASSIVATION AND GALVANOSTATIC ACTIVATION OF ZINC IN SUPERSATURATED ZINCATE SOLUTIONS OF POTASSIUM HYDROXIDE -U-

AUTHOR-(03)-IVANOV, E.A., POPOVA, T.I., KABANOV, B.N.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(1) 100-3

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--POTASSIUM HYDROXIDE, METAL PASSIVATION, OXIDE FILM, ZINC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0694 STEP NO--UR/0364/70/006/001/0100/0103

CIRC ACCESSION NO--AP0105670

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105670

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PASSIVATION OT ZN ELECTRODES OCCURS AT A POTENTIAL OF APPROX. 0.3 V MORE POS. THAN THE POTENTIAL AT WHICH ZNO FORMS. IN SUPERSATD. KOH SOLN. PASSIVATION OF ZN IS NOT CAUSED BY THE FORMATION OF ZNO LAYER BUT RATHER BY THE ABSORPTION OF O IN EXCESS OF STOICHIOMETRIC QUANTITY ON THE SURFACE ZNO LAYER FORMING A FILM OF ZNO SUB1 PLUS M, WHERE M IS LESS THAN 1. THE PEROXIDE TYPE FILM IS FORMED BY THE ELECTRODE DISCHARGE OF OH PRIMENEGATIVE. THE NECESSARY CHARGE FOR A ZN ELECTRODE TO BE PASSIVATED NEAR THE TRANSITION POTENTIAL, NEGATIVE1.0 TO NEGATIVE0.9 V., TO BE ACTIVATED IS 0.7-0.9 MILLICOULOMB-CM PRIME2. AS THE POTENTIAL OF THE PRECEDING PASSIVATION INCREASES, THE QUANTITY OF ELECTRICITY REQUIRED TO REDUCE THE EXCESS O IN THE OXIDE FILM INCREASES LINEARLY. WHEN THE PASSIVATION TOOK PLACE AT 1.1 V, THE AMT. OF ELECTRICITY REQUIRED ROSE TO 130-180 MILLICOULOMBS-CM PRIME2. WHEN PASSIVATION OCCURRED AT 1.4 V THE ELECTRICITY REQUIRED TO ACTIVATE THE ELECTRODE DROPPED SHARPLY, WHICH IS ATTRIBUTED TO THE EVOLUTION OF O ON THE ELECTRODE.

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IVANOV E. P.

AA0046282

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General, Derwent, 2-70

244049 FEED PUMP INSTALLATION contains adjustable pump (1) with control lever (2), constant output pump (3), reduction gear box (4) for driving pumps from internal combustion engine, slide valves (5), shank of the slide valves (6), cam (7), drawbar (8) with handle (9), delivery pipe (10) and draining pipe (11). When control lever is in position I, the pump (3) is connected by slide valve in position A, and the delivery pipe receives supply from pump (1). When handle (9) moves slide valve to position B, half of the fluid from pump (3) goes to delivery pipe, and the rest to pump (1) changing it into a motor. When the lever is moved from position I to position II, the proportion of fluid directed to delivery pipe increases, and in further movements to positions III and IV the fluid delivered by pump (1) is gradually added to the fluid from pump (3). When lever (2) is moved from position O to P, the stream of fluid from pump (1) to delivery pipe becomes reversed, while pump (3) is connected to draining pipe.

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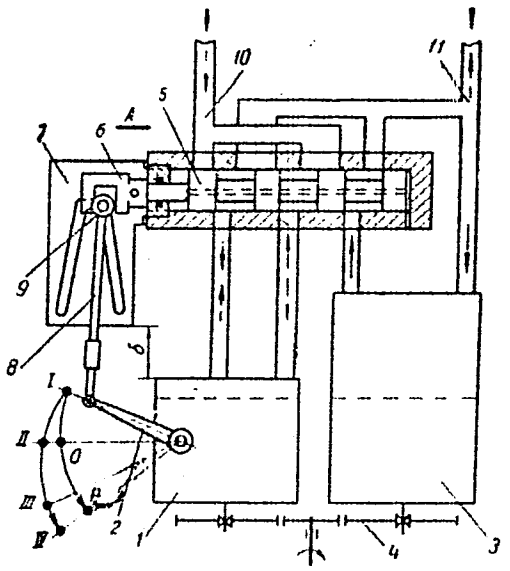

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IVANOV, E. V., SHESTERIN, I. S., TAMBIYEV, A. KH., and TELITCHENKO, M. M., Chair of Hydrobiology Moscow State University

"Using a High-Frequency Generator Based on Line Scanning to Study the Luminescence of Biological Objects in a High-Frequency Discharge"

Moscow, Nauchnyye Doklady Vysshey Shkoly. Biologicheskiye, No 1, 1970, pp 117-118

Translation: The method of photography in a high-frequency discharge can be used to determine the physiological state of biological objects. An electron-tube line scanning generator or a relatively simple design was employed in the experiments.

The possibility of photographing biological objects in high-frequency currents was first discovered by the Soviet investigator S. D. Kirlian (1949). the principle that he elaborated for observing the electrical state of living objects offers great promise for describing the behavior of leaves of different plants and human skin (V. Kh. Kirlian and S.D. Kirlian, 1964; V. S. Lysikov et al., 1964) in a high-frequency field, and for studying the primary energy shifts in the action of radiant energy, specifically, laser radiation (V. M. Inyushin, 1967). The same method has been used to study inanimate objects, e.g., to photograph the surfaces of metal ores and rocks

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IVANOV, E. V., et al., Moscow, Nauchnyye Doklady Vysshey Shkoly. Biologicheskiye Nauki, No 1, 1970, pp 117-118

(V. I. Mikhalevskiy and G. S. Frantov, 1966).

The method of photography in a high-frequency discharge was used to determine the physiological state of the following biological objects under normal and various experimental conditions: leaves of the flowering plant Elodea canadensis, algae of the genus Chara, and the crustacean Daphina magna.

The luminescence of living hydrobionts was compared with that of other organisms killed in different ways (fixation with 40% formalin, heating to 40° and 100° C).

The method was valuable in assessing the physiological state of living organisms. The live algae, Elodea leaves, and daphnids luminesced differently from killed organisms. Characteristically, the various injurious factors (temperature, fixation with formalin) affected the pattern of luminescence in different ways.

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IVANOV, E. V., et al., Moscow, Nauchnyye Doklady Vusshey Shkoly. Biologicheskiye Nauki, No 1, 1970, pp 117-118

In the device described by S. D.Kirlian, a spark generator is used to produce high-frequency currents. V. S. Lysikov et al. (1964) also used a spark generator (in a simplified version) to obtain photographs of leaves from higher plants. We developed and employed an electron-tube line scanner with an original circuit for high-frequency photographing (Fig. 1). Its distinguishing features include a relatively simple design, the possibility of assembling the generator from units and parts produced by Soviet industry, safety and reliability, low weight and small size. The frequency can be smoothly increased from 10 to 120 kHz, the voltage from 0 to 20 kv.

All these advantages, as well as our experience in using the method, lead us to recommend the generator for research on the electrical state of both living and nonliving objects.

Bibliography

Inyushin, V. M. 1967. "Luminescence of Tissues in a High-Frequency

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USSR - IVANOV, E. V., et al., Moscow, Nauchnyye Doklady Vusshey Shkoly

Discharge." In the collection: O biologicheskom deystvii mono khromaticheskogo krasnogo sveta (Biological Effects of Mono chromatic Red Light). Alma-Ata.

Kirlian, S. D. 1949. Author's certificate No 106401.

Lysikov, V. S., Machulan, V. I., Krupenin, K. A., and Brik, P. L. 1964. "A Simplified Generator for Photographing Biological Objects by S. D. Kirlian's Method." Tr. Kishinevsk. s.-kh. in-ta (Transactions of the Kishinev Agricultural Institute), Vol 37.

Mikhalevskiy, V. I. and Frantov, G. S. 1966. "Photographing the Surfaces of Metal Ores With High-Frequency Currents," Shurn. nauchn. i prikladnoy fotografii i kinematografii (Journal of Scientific and Applied Photography and Cinematography). Vol 2, No 5

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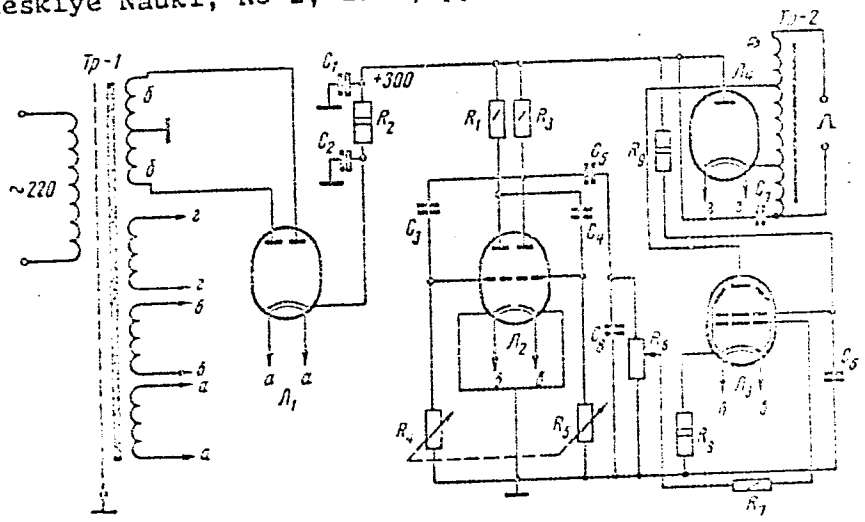
IVANOV, E. V., et al., Moscow, Nauchnyye Doklady Vysshey Shkoly. Biologicheskiye Nauki, No 1, 1970, pp 117-118



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USSR

IVANOV, E. V., et al., Moscow, Nauchnyye Doklady Vusshey Shkoly. Biologicheskiye Nauki, No 1, 1970, pp 117-118

Рис. 1. Схема высокочастотного генератора на базе строчной развертки. C_1, C_2 — 40 мкф×450 в; C_3, C_4—50 пф; C_5 — 0,025 мкф; C_6 — 0,5 мкф; C_7 — 0,05 мкф; C_8 — 300 пф; C_3, C_4, C_5, C_6, C_7, C_8 — рабочее напряжение 500 в; R_2 — 1 ком; R_1, R_3 — 20 ком; R_4 — 390 ком; R_5 — 390 ком; R_6 — 1,5 мом; R_7 — 300 ом; R_8 — 200 ом; R_9 — 10 ком; $Л_1$ — 5Ц3С; $Л_2$ — 6Н6С; $Л_3$ — 6П13С; $Л_4$ — 6П10П; *Тр-1* — силовой трансформатор; *ТР-2* — высокочастотный выходной трансформатор

Fig. 1. Circuit of a high-frequency generator based on line scanning. C_1, C_2 - 40 microfarads X 500 v; C_3, C_4 - 50 picofarads; C_5 - 0.025 microfarads; C_6 - 0.5 microfarad; C_7 - 0.05; C_8 - 300 picofarads; C_3, C_4, C_5, C_7, C_8 - working voltage 500 v; R_2 - kilohm; R_1, R_3 - kilohms; R_4 - 390 kilohms; R_5 - 390 kilohms; R_6 - 1.5 megohms; R_7 - 300 ohms; R_8 - 200 ohms; R_9 - 10 kilohms; L_1 - 5Ts3S; L_2 - 6N6S; L_3 - 6P13S; L_4 - gP10P; Tp-1 power transformer; TP-2 - high-frequency output transformer

1/2 019 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--ANOMALOUS MAGNETIC BEHAVIOR OF IRON, III, CHELATES WITH THIOSEMICARBAZONES OF SALICYLALDEHYDE AND PYRORACEMIC AICD -U-

AUTHOR-(04)-IVANOV, E.V., ZELENTSOV, V.V., GERBELEU, N.V., ABLOV, A.V.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(4), 827-30

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IRON COMPOUND, CHELATE COMPOUND, MAGNETIC PROPERTY, AMMONIUM COMPOUND, ELECTRON ENERGY LEVEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0222 STEP NO--UR/0020/70/191/004/0827/0830

CIRC ACCESSION NO--AT0132494

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AT0132494
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MAGNETIC BEHAVIOR WAS STUDIED FOR THE CHELATES OF FE(III) WITH THE THIOSEMICARBAZONE OF SALICYLALDEHYDE (H SUB2 THAS) AND OF PYRORACEMIC ACID (H SUB2 THPU). THE CHELATES NH SUB4(FE(THSA) SUB2) AND NH SUB4(FE(THPU) SUB2) WERE STUDIED AT 80-393DEGREESK, AND THEY WERE FOUND TO HAVE A LOW SPIN. HOWEVER, THE MIXED COMPLEX NH SUB4(FE(THSA)(THPU)).1.5H SUB2 O EXHIBITED ANOMALOUS MAGNETIC BEHAVIOR. THIS IS EXPLAINED BY THE THERMAL EQUIL. BETWEEN THE GROUND AND 1ST EXCITED ELECTRON LEVELS. THE LIMITING, LOW TEMP. VALUE OF MU SUB3FF DOES NOT REACH THE LOW SPIN VALUE.
FACILITY: MOSK. FIZ.-TEKH. INST., MOSCOW, USSR.

UNCLASSIFIED

USSR UDC 666.97.033.17:666.972.16:666.972.162.002.237

PEREDEREYEVA, E.K., Engineer, GLADKOV, V.S., Candidate of Technical Sciences
IVANOV, F.M., Doctor of Technical Sciences, MAZOV, G.I., Engineer

"Highly Frost-Resistant Centrifuged Concrete With Air-Entraining Additives"

Moscow, Gidrotekhnicheskoye Stroil'stvo, No 3, 1972, pp 37-39

Abstract: Presented in the article are the procedure and results of tests for frost-resistance, conducted on full-scale elements and on samples of various types of concrete with air-entraining and complex additives. It is noted that the air entrained into the concrete mixtures during centrifuging is not removed. It is shown that the introduction of air-entraining and complex additives into centrifuged concrete considerably increases its frost resistance. The greatest frost resistance is noted for shells made of a concrete mixture with an air-entraining additive consisting of neutralized air-entraining resin (2300 freezing and thawing cycles). Centrifuged shell piles with complex additives to provide high forst resistance, are now being produced. 3 figures, 4 tables. 11 bibliographic entries.

1/1

USSR

FROLOV, V., Head of Epidemiology Department, Ministry of Health SSR and IVANOV, G., Senior Department Inspector

"Once More on Influenza"

Moscow, Vechernaya Moskva, 9 Feb 70, p 2

Translation: According to reports of the World Health Organization, an influenza epidemic caused mostly by the A_2-Hong Kong 68 virus had spread to all the countries of Europe in December 1969. The British and French suffered the most. In Bulgaria and Rumania, the type B virus was responsible forthe outbreak in several cities. It was not only European countries that were in the clutches of the flu. There are reports that outbreaks of this type occurred in Israel and India.

In the Soviet Union, influenza and colds during the third trimester of 1969 were not more prevalent than usual for this time of the year. However, in the middle of the fourth trimester reports began to come in about viral influenza. Starting in mid-December there were indications of an increase in the number of flu cases in Moscow, Tbilisi, Karaganda, and Brest. This situation continued until 1/4

USSR

FROLOV, V., et al., Moscow, Vechernaya Moskva, 9 Feb 70, p 2

the first 10 days in January. Now there are outbreaks in other cities. Also, the structure of influenza is not unifrom. Along with cases caused by the A_2-Hong Kong 69 virus, there are others caused by the B strain. With few exceptions, it can be said that the outbreaks are not too violent because of the measures that have been taken to control them.

The incidence of influenza and colds is at a fairly high level in Moscow, especially among adults. School children are less affected.

The health agencies and other organizations are doing all they can to prevent the disease from spreading. The Ministry of Health USSR, together with the All-Union Central Council of Trade Unions, stated that as of 15 January, hospital cards for a period of up to 5 days would be issued to influenza patients at the initial request, with clinical symptoms the essential guide.

2/4

USSR

FROLOV, V., et al., Moscow, Vechernaya Moskva, 9 Feb 70, p 2

Considerable attention is being directed to the organization and execution of vaccination campaigns against the flu.

Extensive use is made of donor anti-influenza gamma globulin for prevention and treatment among children. A variety of sanitary and hygienic measures are also being implemented.

Our physicians do not as yet have available any chemical agents that can immediately kill the agent of influenza or the viruses responsible for diseases of the upper respiratory tract. However, the antibiotics and drugs like sulfadimezin, though they do not act directly on ciruses, nevertheless kill microbes, thus preventing complications and promoting a milder course of the disease.

Anti-influenza serum acts directly on the causative agent. It contains protective substances, antibodies that combat the pathogenic effect of the virus. The serum must be used at the very onset of the disease. It can also be used as a means of prevention by inhaling it once a day for several days in succession.
3/4

USSR

FROLOV, V., et al., Moscow, Vechernaya Moskva, 9 Feb 70, p 2

New drugs that may greatly reduce the incidence of influenza are now undergoing trials.

4/4

USSR UDC 612.792-06:612.591

GORODINSKIY, S. M., BAVRO, G. V., and IVANOV, G. A., Institute of Biophysics, Ministry of Health USSR

"Some Characteristics of Perspiration in Man Exposed to High Temperatures"

Moscow, Gigiyena i Sanitariya, No 10, 1971, pp 33-36

Abstract: The purpose of the experiments was to determine the parts of the human body that perspire most after exposure to high temperatures. Moisture absorbents were applied as sensors to the head, trunk, arms, and legs of 15 subjects at rest and while exercising on a bicycle ergometer at temperatures of 50 and 38°C, respectively. In the resting subjects, perspiration appeared first and then became more intense on the forehead, neck, above the sternum, along the spine (rhomboid field), lower third of the forearms, dorsal surface of the wrists, knee joints, anterior surface of the shins, and dorsal surface of the feet. The perspiration gradually spread to the entire chest, back, shoulders, and thighs, involving all the sweat glands. The zones of intensive perspiration in the subjects riding the bicycle ergometer were found to be the same as in those at rest. The reason is that the intensity of perspiration is determined not by the number of sweat glands in a particular portion of skin but by the level of their activity, which is largely a function of the

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USSR

GORODINSKIY, S. M., et al., Gigiyena i Sanitariya, No 10, 1971, pp 33-36

blood supply. The latter is particularly rich over tendons (aponeuroses) and the less developed muscles. The skin over the well-developed muscles of the extremities perspires much less than on the forehead, small of the back, or chest.

IVANOV, G. A.

Space Physiology

So: JPRS 53801
12 Aug 71

UDC 614.895.5:612.5

FORMULATION OF PHYSIOLOGICAL PRINCIPLES FOR RATIONAL HEAT TRANSFER IN INDIVIDUAL INSULATING GEAR

[Article by S. N. Gorodinskiy, G. V. Mayro and G. A. Ivanov; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 5, No 3, 1971, pp 36-42, submitted 29 April 1970]

Abstract: Experimental data are given on validating the physiological principles for approach to heat transfer in an individual insulating suit. The body regions from which the most effective heat transfer can be ensured because of their anatomical-physiological characteristics were determined. The undesirability of heat transfer primarily from body regions situated over the main muscle groups of the extremities is noted; this is true because the conditions for heat removal from them are less favorable than from the sectors situated over tendons and poorly expressed muscle layers and the possibility of local overcooling of the muscles can lead to a decrease in their performance.

Maintenance of the principal constants of the body internal medium, including thermal, is an indispensable condition for its normal vital functioning.

Within a relatively small range of fluctuations of meteorological conditions the maintenance of body heat content within the range of its optimum values is attained by means of physiological heat regulation mechanisms. However, beyond this range one must have recourse to artificial systems which narrow the range of fluctuations of environmental thermal factors (clothing, housing, etc.). Artificial heat regulating systems assume particular importance under conditions excluding or sharply excluding heat transfer by the body into the surrounding medium, for example, when using means for individual protection: insulating suits.

In order to remove metabolic heat when man works in individual insulating protection equipment, different methods are being developed

IVANOV, G.A.

JPRS 57908
6 Feb 73

II-11. RELATION OF THE VOLUMETRIC AND SURFACE SUPERSATURATIONS DURING CRYSTALLIZATION OF CADMIUM OXIDE FROM A VAPOR-GAS PHASE

[Article by G. A. Ivanov, Ya. S. Savitskaya, Moscow; Novosibirsk, III Simpozium po protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June, 1972, p 21]

A study was made of the problem of determining the values of the volumetric and surface supersaturations and the relations between them under different experimental conditions of growth of single cadmium oxide crystals from the vapor-gas phase in a flow system as a result of the reaction of cadmium vapor with oxygen.

For all the crystallization conditions, the magnitude of the volumetric supersaturation was calculated in accordance with [1] as the ratio of the product of the given partial pressures of the components [Cd and O_2] and their equilibrium values at the crystallization temperature.

The magnitude of the surface supersaturation was calculated by the experimental data on the crystal growth rates and evaporation of the cadmium oxide under kinetic conditions.

BIBLIOGRAPHY

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USSR UDC 681.326

PRZHIYALKOVSKIY, V. V., SMIRNOV, G. D., PYKHTIN, V. YA., VASILEVSKIY, A. N., ZAPOL'SKIY, A. P., MAL'TSEVA, V. A., IVANOV, G. A., REMOROVA, N. A., NEMIROVSKIY, M. YE., and KUSHNIRUV, N. T.

"Processor for Digital Data Processing System"

USSR Authors' Certificate No 305477 Cl. G06 f 15/16, filed 18 Apr 69, published 29 Jul 71 (from Referativnyy Zhurnal, Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 5, May 72, Abstract No 5B220P)

Translation: The proposed device can be used in general-purpose computers operating in the binary and decimal number systems, under fixed- and floating-point conditions, and with representation of information in the form of machine levels and alphanumeric symbols, which have the capability of a wide build-up of peripherals. The processor contains arithmetic and logic units broken down into sections, a data store with word addressing and symbolic addressing, a control device to perform operations in accordance with a program routine, built-in multiplex and selector channels to communicate with the set of peripherals operating simultaneously with the arithmetic and logic unit, a symbol isolation unit, a number unit, and a storage address register.

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USSR

UDC: 681.325.5

IVANOV, G. A., SITNIKOV, L. S., TOKOVENKO, S. Ye., UTYAKOV, L. L.

"A Frequency Subtractor"

USSR Author's Certificate No 292234, filed 6 Oct 69, published 2 Mar 71 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct 71, Abstract No 10B369 P)

Translation: Frequency subtractors are known which contain a storage element and a transistorized switch. The proposed device is distinguished from conventional units by the fact that it contains a comparator, a resistive divider in the collector of the transistor, and a diode, and the storage element is made as a capacitive accumulator circuit whose output is connected through the diode to the collector of the transistorized switch and through the comparator to the centertap of the resistive divider. This improves the operational reliability of the device and simplifies it. One illustration.

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USSR

AVERKIN, A. A., BOROV, Yu. G., IVANOV, G. A., and REGEL', A. R.

"Effect of Pressure on the Electrical Properties of Bismuth"

Leningrad, Fizika Tverdogo Tela, Vol 13, No 2, February 1971, pp 378-380

Abstract: The effect of hydrostatic pressure up to 15 kilobars on the electrical conductivity, Hall effect, reluctance, and thermal emf of single crystals of pure bismuth (99.999%) at room temperature is investigated in this article. The band model of bismuth is used to calculate the variation in concentration and mobility of the current carriers as a function of pressure. Experimental and calculated results are presented graphically. They show that the concentration of the carriers drops by 40-45% at a pressure of 13 kilobars. A small increase in electron mobility and anomalous increase in hole mobility are also detected. It is shown that the band model of bismuth correctly depicts the conduction band, and the occurrence of a new mobile group of holes is possible for the valence band.

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1/2 034 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--THERMOEMF. AND THERMAL CONDUCTIVITY OF BISMUTH AND ANTIMONY ALLOYS DOPED WITH TELLURIUM -U-
AUTHOR-(03)-GRABOV, V.M., IVANOV, G.A., PONARYADOV, V.S.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(1), 267-72

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--CRYSTAL LATTICE STRUCTURE, THERMAL CONDUCTIVITY, BISMUTH ALLOY, ANTIMONY ALLOY, TELLURIUM, METAL COATING, CRYSTAL IMPURITY, ELECTROMOTIVE FORCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1980/0252 STEP NO--UR/0181/70/012/001/0267/0272

CIRC ACCESSION NO--AP0048531
UNCLASSIFIED

2/2 034 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0048531

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LATTICE THERMAL COND., H SUB11 PRIMEL AND H SUB33 PRIMEL, WAS DETD. FOR HOMOGENEOUS SINGLE CRYSTAL SOLID SOLNS. OF BI-SB AT 100DEGREESK WITH 5, 8, 12, 20, AND 30 AT. PERCENT SB BY EXTRAPOLATION OF LATTICE THERMAL COND. OF ALLOYS DOPED WITH TE TO ZERO CONTENT OF TE. ELECTRONIC THERMAL COND. AS A RESULT OF A STRONG DEGENERACY WAS CALCD. WITH THE AID OF THE WIEDEMANN FRANTZ LAW, USING THE CLASSICAL VALUE OF THE LORENTZ NO. TE IMPURITY, VARYING ELECTRON CONCN. CONSIDERABLY, AFFECTS THE THERMAL PROPERTIES OF THE LATTICE ONLY WEAKLY, SO THAT LATTICE CONDS. OF DOPED AND PURE SOLID SOLNS. PRACTICALLY COINCIDE. LATTICE THERMAL COND. OF THE SOLID SOLNS. IS SATISFACTORILY DESCRIBED BY THE THEORY OF KLEMENS WITH THE ACCOUNT OF N PROCESSES OF SCATTERING, WHEN IT IS ASSUMED THAT THE RATIO OF THE RATES OF NORMAL PROCESSES TO THOSE OF FLOPOVER PROCESSES IS 4. AT 90-300DEGREESK, SMALL AND ANISOTROPIC VALUES OF THERMAL EMF. ARE OBSD. WHICH ARE EXPLAINED WHEN A HIGHER LYING BAND OF ELECTRONS IS CONSIDERED. FOR ADDNL. BANDS THE QUADRATIC DISPERSION LAW IS TRUE, AND SIGMA SUB11 CONGRUENT TO 4 SIGMA SUB33. THE MAIN BAND IS NONPARABOLIC. SCATTERING TAKES PLACE ON ACOUSTICAL PHONONS.

UNCLASSIFIED

1/2 033 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--DETERMINATION OF THERMODYNAMIC CHARACTERISTICS BY USING A PIEZOELECTRIC MICROWEIGHING METHOD -U-

AUTHOR-(03)-GUGLYA, V.G., IVANOV, G.A., SEMENOVA, Z.A.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB. 1970, 36(3), 289-92

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--THERMODYNAMICS, QUARTZ, PIEZOELECTRIC EFFECT, FREQUENCY CHARACTERISTIC, HEAT OF VAPORIZATION, DECANE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/0099 STEP NO--UR/0032/70/036/003/0289/0292

CIRC ACCESSION NO--AP0127725

UNCLASSIFIED

2/2 033 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0127725

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PRINCIPLE OF A PIEZOELEC. MICROBALANCE, I.E. DETN OF THE FREQUENCY CHANGE OF THE QUARTZ PLATELET CAUSED BY ITS LOAD CHANGES, WAS USED TO DET. THE HEAT OF VAPORIZATION OF OCTADECANE. THE MEASURED VALUE (21.5 KCAL) IS IN FAIR AGREEMENT WITH THE CALCD. ONE (22.03 KCAL). THE APP. AND EXPTL. PROCEDURE ARE DESCRIBED AND THE FACTORS INFLUENCING THE ACCURACY AND REPRODUCIBILITY OF THE MEASUREMENT ARE CONSIDERED. FACILITY: MOSK. INST. STALI SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

USSR

IVANOV, G. G.

"Parallel Sorting Algorithms"

Sb. Tr. In-t Mat. Sib. Otd. AN SSSR [Collected Works of Mathematics Institute, Siberian Division, Academy of Sciences, USSR], 1972, No 6(23), pp 8-15 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V645, by the author).

Translation: Parallel sorting (ordering) algorithms for files of numbers are presented, oriented toward matrix multiprocessor computer systems performing the operations of APL. The primary sorting algorithm is presented, allowing parallel ordering of a file of length n with an n x n matrix of processors. An algorithm of paired sorting is suggested for sorting of files of length $N > n$, forming an ordered file of length 2n from two ordered file of length n. The order of selection of files for paired sorting can be determined by the Bouse-Nelson method, but higher sorting speed is achieved by using a special modification of the merging method. Formulas relating the sorting time to the length of the file sorted, dimensionality of processor matrix and running time of main sorting algorithm and paired sorting algorithms are presented for both methods.

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USSR

IVANOV, G. G., TOLST'YEV, V. P.

"Selection of Method and Group Operations for Solution of Systems of Linear Equations"

Vychisl. Sistemy [Computer Systems -- Collection of Works], Novosibirsk, No 46, 1971, pp 153-157, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V716).

NO ABSTRACT.

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USSR

IVANOV, G. G.

"The Structure of a Computer Device for Solution of Systems of Linear Equations"

Vychisl. Sistemy [Computer Systems -- Collection of Works], No 46, Novosibirsk, 1971, pp 158-160, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V674).

NO ABSTRACT.

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USSR

MELIKHOV, A. N., BERSHTEYN, L. S., IVANOV, G. I.

"Analysis of Structural Plans of Asynchronous Automata"

Avtomatika i Vychisl. Tekhn. [Automation and Computer Technology], 1972, No 6, pp 14-18 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V439, by N. Katerinochkina).

Translation: An algorithm is presented for construction of a generalized quadratic automat matrix (GQAM) on the basis of the structural plan of the asynchronous automata. The GQAM is defined as a matrix in which the intersection of the ith row and the jth column carrier a Boolean function which takes on the value of 1 with those and only those sets of values of input and internal variables which shift the automaton from state q_i to state q_j.

An algorithm is presented for detection of contradictions and continuous transitions and dangerous runs in the memory of the asynchronous automaton by means of its GQAM.

UDC: 8.74

USSR

MELIKHOV, A. N., IVANOV, G. I., INOZEMTSOV, Z. P., ORLOVA, A. S.

"A Program for Checking an Automaton for Contradiction, Redundancy and Ripple-Through Jumps"

Inform. materialy. Nauch. sovet po kompleks. probl. "kibernetiki" AN SSSR (Informational Materials. Scientific Council on the Complex Problem of Cybernetics, Academy of Sciences of the USSR), 1971, No 7(54), pp 118-119 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V554)

[No abstract]

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USSR

UDC 539.3

IVANOV, G. M., KOSMODAMIANS'KIY, O. S., Corresponding Member of the Academy of Sciences of the Ukrainian SSR

"Determination of the Form of Equistrength Holes in Thin Isotropic Plates"

Kiev, Dopovidi Akademii Nauk Ukrains'koi RSR, No 7, 1973, pp 634-636

Abstract: An approximation method is proposed for determining the equistrength outlines of two identical holes weakening a thin isotropic plate. The edges of the holes are either loaded or reinforced by rigid rings. As the condition of equistrength, the requirement is adopted that at all points of the desired outlines the moments assume constant values.

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USSR

UDC 621.384.6

GROSS, L.P., IVANOV, G.M., MAKHENKO, L.A., SHAL'NOV, A.V.

"An Experiment On The Effect Of The Current Load Of A Waveguide Accelerating Structure"

V sb. Uskoriteli (Accelerators--Collection Of Works), No 12, Moscow, Atomizdat, 1970, pp 36-43 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12A370)

Translation: The interaction of a succession of grouped clusters with the waveguide structure was experimentally studied under conditions of inequality of velocities of the accelerating wave and particles. The fourth section of the 360 Mev electron linear accelerator of the Physico-Technical Institute of the AS, Ukr SSR was used as a waveguide structure. During the experiment a method was used for shift of the dispersion curve of the waveguide structure by a change of its temperature. The signal induced by the beam in the waveguide structure was lead to the outside and measured with the aid of a linear detector, calibrated by a thermocouple. The dependence obtained of the intensity of the induced field on the frequency difference agrees with the theoretical curve within the limits of 5 percent. A direct inspection was conducted of a model representation of the pattern of the induced field transients at the beginning and at the end of a current pulse. An oscilloscopic analysis of the pulses confirmed the presence of amplitude and phase modulation of the radiation field in a transient regime. S.F.

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USSR

UDC 621.382.2

SIROTA, N.N., IVANOV, G.M., KORSHUNOV, F.P., KOSOLAPOV, N.N.

"Effect Of Electron Irradiation On P-N Junctions In Silicon"

V sb. Radiatsion. fiz. nemet. kristallov (Radiation Physics Of Non-Metallic Crystals--Collection Of Works), Minsk, "Nauka i tekhn.," 1970, pp 136-141 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2B131)

Translation: The irreversible changes of the voltampere characteristics of p-n junctions in Si on exposure to irradiation by electrons with energies of 10--25 Mev are investigated. It is established that at low injection levels the forward voltage drop after irradiation is decreased, which is explained by the reduction of concentration and lifetime of the majority charge carriers in the p- and n-regions. At high injection levels, as a result of an increase of resistance of the base during irradiation, its effect on the form of the characteristics becomes noticeable. With an increase of the temperature, equal changes of the forward drop begin with large flux density. The effectiveness of the action of irradiation by electrons on the forward characteristics grows with an increase of the energy of the electrons, while the back characteristics remain practically without change. 6 ill. 6 ref. V.M.

1/1

USSR

UDC 621.791.75.753

CHVERTKO, A. I., IVANOV, G. P., and PORKHUN, B. V., Electric Welding Institute imeni Ye. O. Paton of the Academy of Sciences UkrSSR

"A New Method of Arc Excitation in Hidden-Arc Welding"

Kiev, Avtomaticheskaya Svarka, No 4 (241), Apr 73, pp 44-45

Abstract: A new method of arc excitation in hidden-arc welding, developed by the Electric Welding Institute imeni Ye. O. Paton, is described. By this method, the end of the electrode is brought into vibration for the excitation time and its supply rate is decreased in comparison with the working rate. The vibration is produced in a direction perpendicular to the electrode axis. In this case, the electrode freely penetrates through the flux layer to the object, the clinker desintegrates, and the intermittent contact of the electrode end with the object contributes to a reliable arc excitation. The effectiveness of the described arc excitation is illustrated by an experiment carried out in two variants. Four bibliographic references.

1/1

USSR

UDC 621.396.69:621.319.4(088.8)

IVANOV, G. P., LIVSHITS, I. A.

"A Variable Capacitor"

USSR Author's Certificate No 260019, Filed 2 Dec 68, Published 27 Apr 70 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V331 P)

Translation: This Author's Certificate introduces a variable capacitor which contains rotor and stator plates and a mechanism for correcting the capacitance as a function of the angle of turn. The capacitor is made in the form of a flexible diaphragm resting on regulating screws. Pressed against this diaphragm is a correcting lever fitted with a roller on the end. As a distinguishing feature of the patent, correction precision is improved by making one of the end rotor plates spring supported and fitting it with a sleeve whose shoulder supports the free end of the correcting lever.

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USSR

UDC 513.015.4:513.7

IVANOV, G. S.

"Several Constructional Problems of a Central Quadratic Transformation"

Sb. tr. Povolzhsk. lesotekhn. in-t (Collection of Works of the Povolzh'ye Forestry Engineering Institute), 1968, No 58, Vyp. 2, pp 229-237 (from RZh-Matematika, No 2, Feb 1970, Abstract No 2A609)

Translation: The article deals with the determination and mapping of imaginary reciprocal points of elliptical involution. In solving this problem, use was made of the Hirst transformation frame of reference, which is a generalization of circular inversion (a conical section is taken as the curve of reference, and the center of the transformation is adopted in the general case as non-coincident with the center of the curve of reference). The proposed graphical method of construction and mapping of imaginary reciprocal points of elliptical involution, along with familiar solutions of the given problem for parabolic and hyperbolic onvolution, introduces a certain system in the graphical determination, mapping, and operation with reciprocal points of all involution types.

L. Kuznetsova

1/1

Instruments and Measurements

UDC 621.317.791

USSR

IVANOV, G. YE., KIRIN, YU. P., RYZHEVSKIY, A. G., RYZHEVSKAYA, T. N., SHLYANDIN, V. M.

"Procedure for Measuring Passive Parameters of Electric Circuits"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 17, 12 May 70, p 55, Patent No 270881, Filed 11 Feb 69

Translation: This Author's certificate introduces a procedure for measuring the passive parameters of electric circuits based on investigation of the transient process in a measuring circuit containing active and reactive elements. In order to widen the measurement limits, improve the accuracy of the beginning of the measurement range and decrease the power dissipated in the investigated element, a linearly varying voltage is fed simultaneously to the measuring circuit and the resistive voltage divider. The point at which the voltages at the midpoints of the measuring circuit and the divider are equal is determined, and the time interval proportional to the measured parameter is isolated.

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IVANOV, I.B.

SOVIET-FINNISH COLLABORATION IN GEOLOGY

(Article by Candidate of Geological and Mineralogical Sciences [redacted] Moscow, Vestnik Akademii nauk SSSR, Russian, No 12, December 1973, pp 87-89)

The second joint session of the mixed Soviet-Finnish working group on scientific and technological collaboration in geology was held on 28-31 August in Otaniemi, a suburb of Helsinki, in the State Geological Research Institute of Finland. Participating in the session on the Finnish side were the General Director of the Geological Institute, O. Silvennoinen, Professor A. Simonen of that Institute, chief of the geological service of the Pastarinkki Mining Company, H. Paarma, and Professor H. Tuominen of the University of Helsinki. The Soviet side was represented by the Director of the Institute of Geology and Geochronology of the Pre-Cambrian of the AS USSR, Corresponding Member of the AS USSR K. O. Kratts, the Director of the Institute of Geology of the Karelian Branch of the AS USSR V. A. Sokolov, and the author of this report, I. B. Ivanov.

Soviet and Finnish specialists in geology have already been collaborating for a long time. In May 1972, at the first joint session of the working group, a Protocol on the development and tasks of such collaboration was signed.

In considering the work plans for 1974 the participants in the second session arrived at the unanimous opinion that it was desirable to conduct joint investigations on the most important problems of the geology of the Pre-Cambrian, primarily on questions in the study of the crust and upper mantle of the Earth within the limits of the Baltic Shield, the metallogeny of the Baltic region, the isotope stratigraphy and geochronology of Pre-Cambrian formations, geomorphology, Quaternary deposits and neotectonics of Finland and the Northwest of the USSR. The sides agreed by the next session of the working group

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USSR

UDC 541.183

MARTYNOV, G. A., and IVANOV, I. B., Institute of Physical Chemistry Academy of Sciences USSR, Moscow; Sophia State University

"Statistical Theory of Monomolecular Adsorption. III. Nonlocalized Monomolecular Adsorption"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 47, No 1, Jan 73, pp 135-139

Abstract: The Gursey isotherm was obtained from results of accurate calculations of the statistical integral of an uniform gas. It is accurate at any degree of filling τ. By using this function it was shown that the effect of pseudosaturation at $\tau \approx 0.5$, determined in a previous study, in which the adsorption of solid balls was investigated, is maintained also when attraction forces between the adsorbate molecules are taken into consideration.

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"Statistical Theory of Monomolecular Adsorption. IV. Monomolecular Adsorption on the Crystal Surface"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 47, No 1, Jan 73, pp 140-144

Abstract: Using the Arinshteyn equation, an isotherm of localized Frumkin-Fauler-Guggenheim adsorption was obtained and the limits of its applicability were analyzed. The adsorption on the surface of a real crystal was analyzed and an isotherm was obtained which was correct for the degree of filling $\tau \lesssim 0.2$-0.3. The relationship of τ to the attraction energy between adsorbate-adsorbent, to the ratio of molecular diameter of the adsorbate to the lattice parameters, etc. were studied. It was shown that at $\tau \lesssim 0.2$-0.3 it is practically impossible to distinguish the localized and nonlocalized adsorption on the basis of the adsorption isotherm.

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Measurement of Low-Energy Ions

(Abstract: "Measurement of Low-Energy Ions," by Yu. I. Gal'perin, V. A. Gladyshev, I. D. Ivanov, I. N. Karpinskiy, T. M. Mulyarchik, B. V. Polenov, V. V. Temnyy, B. I. Khazanov, A. V. Shifrin and F. K. Shuyskaya; Moscow, Kosmicheskiye Issledovaniya, Vol VIII, No 1, 1970, pp 120-126)

[Note: This is part of a sectionalized article "Study of Geoactive Corpuscles and Photoelectrons on the Satellite 'Kosmos-261'," Kosmicheskiye Issledovaniya, Vol VIII, No 1, 1970, pp 104-136]

The RIP-801 low-energy ion spectrometer is described; it was used on the "Kosmos-261" satellite for measuring ions in the range 0.04-8 keV. It is a modulation trap with magnetic protection of the ring collector; this suppresses the currents of secondary electrons and photoelectrons from the collector. The ion flux is modulated by a voltage in the form of a rectangular wave with a frequency of 300 cps and voltage amplitudes of 0.5 and 2 kV over threshold voltages from 0.04 to 6 kV. The electric electric current of the central collector and the positive current of the ring collector are measured. This paper gives the first results of measurements on the "Kosmos-261" satellite. In regions close to the auroral zone it is common to register fluxes of ions with energies of several keV, at-

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taining 10^7 ions·cm^{-2}·sec^{-1}keV^{-1}. After midnight these particles are situated in the northern hemisphere near the southern boundary of the region of injection of electrons in the form of a "hydrogen arc." In addition, in the southern and northern polar caps in the region of invariant latitudes 70-80° ions were registered simultaneously with soft electrons in the so-called "second" or "soft" auroral zone. The ion energy spectra in the northern hemisphere (nighttime, altitude about 220 km) and in the southern hemisphere (daytime, altitude about 600 km) are different. In the northern auroral zone the spectrum has a pronounced maximum in the region 1.5-2 keV, whereas in the southern auroral zone and in the south pole cap the spectrum in the region 0.04-8 keV is rather flat (without taking into account the charge exchange of protons during passage through the atmosphere). The pitch-angle distribution usually has a maximum near 70°. The authors given an example of an ion intensity burst in the low latitudes over the USSR at L $\approx$ 2.

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